MEASURING THE OUTSIDE POTENTIAL OF THE OECD COUNTRIES[1]

Abstract

The purpose of the article is to measure the outside potential of the OECD countries with the help of the K-index, an indicator we created after conducting a survey on it. Later on the index will be used to classify Hungary's performance in a three-dimensional matrix of institutions. After an analysis on the data of OECD economies, we have concluded that the developed countries can be divided into four groups, and these four groups can be distinguished by four main factors: macroeconomic performance, knowledge-based entrepreneurial environment, guarantees of market competition and international attractiveness. These factors summarize the institutional conditions that influence an economy's ability to make use of the opportunities provided by the global market.

Key words: global competitiveness, measuring competitiveness

JEL classification: F02 F59 P45

1. Introduction

The paper was written as a part of a research project whose main purpose is to identify the institutional factors[2] that have the greatest influence on the economic performance of Hungary. Once the most important factors are identified, they will be used to set up future scenarios that will help in formulating a strategy for the country to successfully meet the challenges of the global economy. The paper presents a small segment of the research, focusing on the outside potential of the OECD economies, one of our three major dimensions along which the economic potential is assessed (the other two, not discussed in the article being the inside and the future potential).

Outside potential shows the ability of countries to exploit the opportunities presented by the world economy during the use of domestic resources. It includes sales to overseas markets, and the acquirement of additional resources (capital, labour or natural resources) to complement the domestic ones. When measuring outside potential we cannot confine ourselves to the traditional indicators of economic openness, as the purpose of the research is not to give a diagnosis of the current position of countries, but also to reveal the factors determining a high level of outside potential.

Many organisations publish indices framed with similar objectives, e.g. the World Bank compiles the so called Doing Business Index ranking more than 180 countries [World Bank, 2011], the World Economic Forum publishes the Global Competitiveness Index that combines traditional statistics with opinion polls of managers and experts [WEF 2010], and the International Institute for Management and Development put together and index that has an incredible 327 components, the World Competitiveness Index [IMD, 2010]. All of these indices are meant to measure international competitiveness, but their structure is different from the three-dimensional approach taken by our research projects, and for that reason we chose to neglect them, and set up our own measurement system.

2. Methodology

2.1. Selecting the components

The components used to measure the outside potential were selected with a double-filter method. As a first step a brainstorming sessions was held involving experts of the

field. During the brainstorming a long list of factors was compiled that can influence the economic potential of a country. 50 factors were finally chosen from the list; and these 50 factors were listed on the questionnaire compiled as a second step of the selection process. These 50 factors were: macroeconomic performance; country risk ranking; stock market performance; ratio of the tertiary sector; real GDP growth rate; GDP per capita; inflation rate; budget balance; role of the state in the economy; efficiency of state intervention; rate of corruption; exchange rate stability; rate of economic openness; evolution of foreign direct investments (FDI); promoting FDI; domestic market size; costliness of infrastructure; rate of tax burden; sustainability of pension system; ease of starting a business; flexibility of labour market; aging of society; increasing income inequality; level of employment; availability of skilled labour; job market position of women; job market culture; availability of investment resources; stability of financial sector; transparency of corporate processes; social responsibility of corporations; international cooperation of companies; vertical and horizontal integration; value system of the population; level of competition on the domestic market; level of development of physical infrastructure; level of development of clusters; research and development expenditure; research and development potential; health expenditure; health condition of the population; environmental sustainability; eco-innovative solutions; development of renewable energy sources; energy efficiency; restricting greenhouse gases; education expenditure; efficiency of education system; level of foreign language skills; level of social welfare.

The respondents of the questionnaire were asked to rank all components on a 1-7 scale (1 = not important at all; 7 = extremely important) separately for the three dimensions of the research (inside, outside and future potential). In case of outside potential the respondents had to score high on a component, if they thought that it had a major influence on the current global position of the Hungarian economy.

A total of 32 responses were returned. During the evaluation of the responses the following method was used to identify factors having the strongest influence on the inside, outside or future potential of a country:

1) each factor was assigned to the potential the respondents gave the highest score to (e.g. if in case macroeconomic performance the respondents gave an average score of 5.12 for inside potential, 4.88 for outside potential and 4.12 for future potential, macroeconomic performance was assigned to inside potential etc.)
2) to limit the number of important factors, only those were taken into account that had a score above the average score of the whole sample (e.g. let's say the average of all scores was 4.56; in that case a factor was not considered important for either potential, if it had a score lower than 4.56).

As a result of the evaluation process 27 factors were identified. Twelve of these are components of the future potential, ten of them are components of the inside potential, and five are those of the outside potential. Table no. 1 contains these five factors, and also the indicator used to quantify it.

Table no. 1 – The factors and indicators of outside potential

Influencing factor	**Indicator**
Rate of economic openness	(value of exports + value of imports)/2*GDP
Country risk ranking	Credit rating of IIM (0-100 scale)
Stability of financial sector	IMD survey on the transparency and reliability of financial organisations (0-10 scale)
Exchange rate stability	Two-year parity change in the rate of local currency/SDR
Level of foreign language skills	TOEFL scores of 15 year-olds

2.2. Measuring outside potential

Further research is immensely facilitated if a comparable indicator is calculated to measure the outside potential of all the developed economies. We have developed the K-index for that purpose, which is quantified as the average of the standardised value of those five components that were found to have a strong influence on the outside potential of Hungary after the evaluation of the questionnaires. As the OECD countries were selected as the base of the research, the indicators used to measure the outside potential were collected for the 34 member states, and the value of them were standardised to a 1-7 scale using the formula below:

$$6 * \frac{\text{indicator value} - \text{sample value}}{\text{sample maximum} - \text{sample minimum}} + 1$$

~~6*(indicator value – sample maximum)/(sample maximum – sample minimum) + 1~~

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In case of indicators where the higher value represents a worse outcome (e.g. the parity change in the local currency/SDR) the above formula leads to misleading results, an other formula had to be used therefore:

$$-6 * \frac{\text{indicator value} - \text{sample maximum}}{\text{samplemaximum} - \text{sample minimum}} + 7$$

~~-6*(indicator value – sample maximum)/(sample maximum – sample minimum) + 7~~

After converting the original values to the 1-7 scale, the K-index may be calculated as the average of the standardised values~~.~~ (where 'n' is equal to 5 in this case): ~~A high K-index value shows a high outside potential of a country~~

$$\text{K - index} = \frac{\sum_{i=1}^{n} \text{standardised value of the indicator}}{n}$~~.~~$$

A high K-index value shows a high outside potential of a country.

3. Analysing the K-index

After collecting the indicators showed in *Table no. 1*, and doing the necessary calculations mentioned in point 2.2., the K-index values were obtained ranging from 2.3 (Iceland) to 6.6 (Luxembourg). As all OECD members are considered developed economies, we did not expect to have significant differences in their K.-indices, and our expectations were proved right with the exception of two countries. According to our calculations Iceland has very low outside potential, Luxembourg on the other hand a very high one. The K-index values of all OECD countries are shown by Figure no. 1.

3.1. Clusters of OECD countries

Four groups of countries can be separated within OECD members according to their K-index values. The countries of the first group are: Australia, Austria, Belgium, Canada, Denmark, Finland, Luxembourg, Germany, the Netherlands, Norway, Sweden and Switzerland. The second group contains Chile, the Czech Republic, Estonia, Israel, Slovakia and Slovenia, while the third one France, Hungary, Ireland, South Korea, New-Zealand, Poland Portugal, Spain, the United Kingdom and the United states. Finally the countries of the fourth group are Greece, Italy, Japan, Mexico, Turkey and Iceland.

In order to determine the validity of the freshly calculated K-index, and to be able to tell whether or not it measure properly the outside potential of an economy's performance, a correlation analysis was conducted during which the K-value was compared to more than 60 variables indicating the current state of a country's economy and society. The analysis was also well suited to reveal the institutional factors whose values move together with that of the K-index. We have found that the factors significantly correlating with the K-index are mostly components of the so called formal and informal institutional factors, therefore the index is quite handy to signify their aggregate effects.

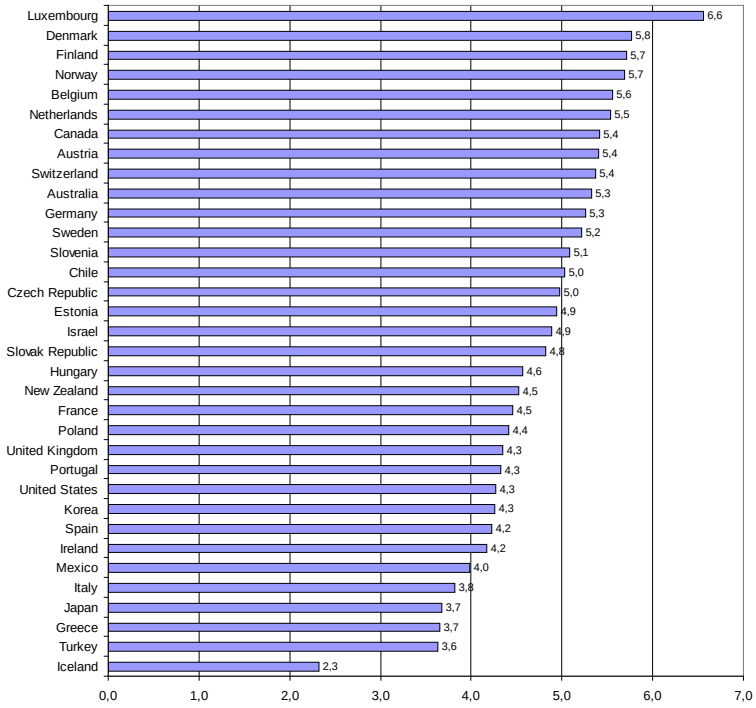

Figure no. 1 – The K-index of the OECD countries (2010)

To make things simpler the more than a dozen influencing components were organised into four factors with the help of the SPSS statistical software package (the value of KMO is 0.748). The factor analysis conducted using the Maximum Likelihood method preserves 75.3% of the information content of the original significant variables. The components of the four factors are the following:

1. Macroeconomic performance

Investment risk	Country risk ranking of Euromoney (0-100 scale)
Total productivity	GDP (based on purchasing power parity, USD) per employee
Labour productivity	GDP (based on purchasing power parity, USD) per hour
GDP per capita	GDP (based on purchasing power parity, USD) per capita
Quality of life	Level of life quality (0-10 scale)

2. Knowledge-based entrepreneurial environment

Adaptability of companies	The adaptability of companies to market changes (0-10 scale)
Company productivity	The extent to which global strategies (supplier chain, offshoring, outsourcing) support the productivity of companies (0-10 scale)
Small and medium sized companies	The correspondence of small and medium sized companies to international standards
Innovation capacity	The ability to develop new products and services (0-10 scale)
Communication technology	The correspondence of communication technologies to business requirements (0-10 scale)
IT abilities	Availability of IT potential (0-10 scale)
Social responsibility	The level of manager's social responsibility (0-10 scale)

3. Guarantees of market competition

Protectionism	The rate of protectionism (0-10 scale)
Ease of doing business	The rate at which regulations support the business activity (0-10 scale)
Bureaucracy	The rate at which bureaucracy hampers the business activity (0-10 scale)
Corruption	The level of bribery and corruption (0-10 scale)

4. International attractiveness

National culture	Openness of national culture (0-10 scale)
Country image	The effect of the country image on business activity (0-10 scale)
Investment incentives	The attractiveness of investment incentives (0-10 scale)
Capital market	The availability of the capital market (0-10 scale)

The clusters of countries can be investigated with the help of these four groups of factors.

1st group – the Prominent Countries

The prominent Countries have got the highest average score in all four factors (Macroeconomic performance, Knowledge-based entrepreneurial environment, Guarantees of market competition and International attractiveness). Their results are well-balanced, they have approximately the same lead over the other countries in every area.

2nd group – the Attractive Countries

The most imminent characteristic of the second group is that their international appreciation is above average despite the fact that their macroeconomic performance is the weakest of all four groups. Only the Prominent Countries have higher international attractiveness. Their international appreciation is probably due to the fact that these countries also score relatively well in the Guarantees of market competition, and their achievements of the field influence the opinion of the international investors and experts.

3rd group – the Mid-rank Countries

The Mid-rank Countries score really low in the factor where the Attractive ones score above average (Guarantees of market competition). Apart from that, the scores of the two groups of countries are fairly similar, around the average, more than that, the Mid-rank group has a higher average in Macroeconomic performance and Knowledge-based entrepreneurial environment. The significant difference between the second and third group of countries comes from the Guarantees of market competition, and that, on the other hand, has an influence on their International attractiveness as well.

Hungary is also a member of the Mid-rank Countries. It seems that the key of ranking up to a higher cluster is the improvement of domestic regulations, which will improve all the other factors as well thanks to the spill-over effect.

4th group – the Loser Countries

The countries falling into the fourth group score below average in all four factors, and have an especially bad International attractiveness. As their macroeconomic performance is not exaggeratedly below the OECD average, most of their disadvantage comes from the less quantifiable institutional factors. All the countries that have ended up on the front pages of business magazines for the past few pages because of their poor economic performance, can be found in the fourth group.

3.2. Changes in the K-index (2000-2010)

Figure no. 2 shows how the value of the K-index changed during the last decade, from 2000 to 2010. Changes were deduced the following way: a K-index value was first calculated for the year 2000 (using indicators describing the economic position of the OECD countries in 2000); then the newly calculated 2000 K-index was set against K-index values from 2010.

It is quite clear that the countries that suffered a decrease in their index values are the ones whose international appreciation and competitiveness has taken a slump after the international financial and economic crisis at the end of the first decade of the new millennium (Iceland, Ireland, the USA and the UK). It might come as a surprise, but the Central-European region has performed extremely well (five of the first seven countries come from this area), which can be an indication that these countries were the ones which managed to survive the crisis with the least sacrifices in their outside potential.

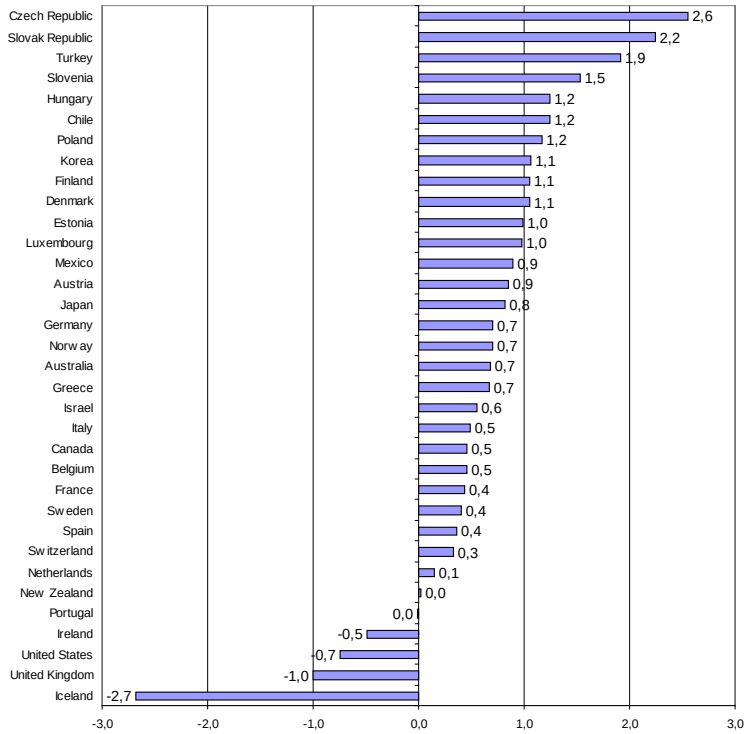

Figure no. 2 – The change in the K-index value of OECD countries between 2000 and 2010

4. Conclusions

The K-index developed by the authors to measure the outside potential of the OECD countries (and especially that of Hungary), is best suited to show the effects of the institutional factors. We have found that the K-index is not significantly influenced by such traditional indicators of economic performance and world market openness as the rate of economic growth, the value of exported goods and services, or the change in the volume of incoming and outgoing capital.

There is a definite correlation between the value of the outside potential and macroeconomic performance, however, which signifies that the index can be used as an indicator of efficient use of economic resources. There is also a positive correlation with other components that were grouped into the factors of Knowledge-based entrepreneurial environment, Guarantees of market competition and International attractiveness with the help of factor analysis. From the perspective of the latter one (International attractiveness)

the change in the value of the K-index between 2000 and 2010 is especially telling. The K-index of the countries whose international appreciation has suffered the most for the past 2-3 years (e.g. Iceland, Ireland), dropped significantly during the last ten years.

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Notes

1. The paper was prepared within the framework of OTKA project nr. K 76870/2009
2. Institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behavior, conventions, and self imposed codes of conduct), and their enforcement characteristics. [North, 1990] Both types of institutions have a strong influence on a system's performance, but the measurement of them is really difficult.